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CLINICAL CASE REPORT

Complex Regional Pain Syndrome Type 1 Relieved by Acupuncture Point Injections with Placental Extract

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Abstract

This is a case report of a female patient who developed complex regional pain syndrome in the left upper limb after a traumatic injury to the distal part of the left forearm. The pain was immediate and resistant to oral analgesics and continued transcutaneous electrical nerve stimulation. Five months after the injury, the patient presented to our clinic with severe pain, swelling, redness, cold sensation of the left hand, and loss of function from the left hand up to the left shoulder. Acupuncture points LI5, LU2, SI10, HT1, GB21, and SI11 (which are localized in the joints or in the muscles responsible for the movement of the left upper limb) were selected for the application of the placental extract. Injection of placental extract into the acupuncture points resulted in dramatic pain relief, swelling remission, motor recovery, temperature normalization, and disappearance of redness in this patient with complex regional pain syndrome type 1.

1. Introduction

Complex regional pain syndrome type 1 (CRPS1) is a complex disease characterized by severe pain, swelling, motor deficit, and changes in the skin and annexae. The pathophysiology of CRPS1 remains unclear. However, studies

have suggested that neurogenic inflammation has a key role in the signs and the symptoms of CRPS1 [1,2]. Some reports indicate reduced pain in patients with CRPS1 after long-term acupuncture treatment [3–6]. However, other parameters of inflammatory reactions such as swelling, mobility, temperature, and redness do not seem to be improved by long-term acupuncture treatment.

The injection of a dilute drug solution into the acupuncture points has been used recently to maximize the therapeutic effect of acupuncture [7,8]. In adjuvant-induced polyarthritic rats, injecting placental extract

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especially at acupuncture points alleviates arthritic symptoms, including joint destruction and the expression of inflammatory cytokines [8]. In addition, the intra-articular injection of placental extract reduces deformity in knee joints and inhibits the matrix metalloproteinase-2 and metalloproteinase-9 activities in the cartilages of osteoarthritic knee joints in rats [9]. In this research study, we examined the therapeutic effect of injecting a placental extract into the acupuncture points in a patient with a disease involving inflammation, CRPS1.

2. Case Report

A 42-year-old woman with an injury to the distal part of the left forearm and a 2-day history of acute pain went to a pain physician's clinic. She was administered transcutaneous electrical nerve stimulation on the affected limb and the oral analgesic, dexibuprofen. She was treated for 4 months; however, passive movement or active movement exacerbated the pain from the wrist to the shoulder. Five months after the injury, she presented to our clinic with severe pain, swelling, redness, a cold sensation in the left hand, and extremely restricted mobility in the left wrist and shoulder joints. A radiologic test showed no signs of a fracture in the left forearm. Further examination revealed no clinical signs of nerve injury or sympathetic hyperactivity such as nail thickness and sudomotor activity. Her subjective symptoms of burning pain and edema at the site of the injury, joint stiffness, restricted mobility, and changes in the color and temperature of the skin at the extremities satisfied the criteria for CRPS1 by the International Association for the Study of Pain. Localized swelling was present at the site of the injury, but the swelling had not spread to other regions; hence, she was diagnosed as having stage 1 CRPS1.

Human placental extract (Laennec, Green Cross), obtained under the regulations of the Korean Food and Drug Administration (Seoul, Korea), was purchased from Green Cross Ltd. (Yongin, Korea). After the patient provided informed, written consent, the extract was weekly injected into acupuncture points LI5, LU2, SI10, HT1, GB21, and SI11

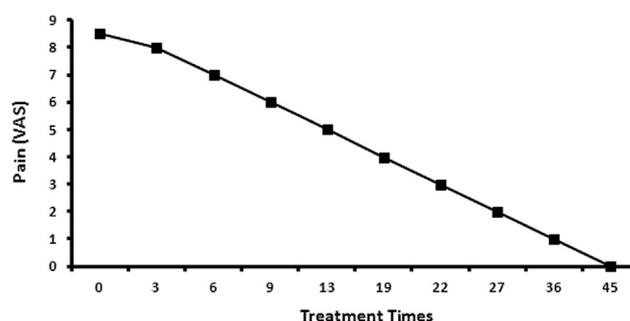


Figure 2 Effect of injecting placental extract at acupuncture points on pain. VAS = visual analog scale.

in the left upper limb (Fig. 1). Two milliliters of placental extract were injected into acupuncture points LI5, LU2, SI10, and HT1 by using a plunger with a 26-gauge needle, whereas 1 mL of placental extract was injected into acupuncture points GB21 and SI11. A needle was inserted into acupuncture point LI5, which is localized on the radioscaphoid joint of the left hand, and the extract was administered in the space of the joint. At acupuncture points LU2 and SI10, which are localized on the anterior and the posterior scapulohumeral joint, respectively, a needle was inserted to a depth of 25 mm into the tissues overlying each acupuncture point. At acupuncture points HT1 and SI11, the tips of the needles were placed on the subscapularis and the infraspinatus muscles, respectively. For acupuncture point HT1, a 2-inch-long needle was employed especially to stimulate the subscapularis muscle from the axillary fossa. Injection into acupuncture point GB21 was carefully performed by gripping the trapezius muscle and inserting the needle from the posterior to avoid piercing the lung.

The patient's pain score was recorded by using the visual analog scale (VAS) on which a score of zero indicates "no pain" and a score of 10 indicates "the worst pain possible." The patient was asked to indicate her feeling of pain by drawing a vertical line on a 10-cm VAS prior to the placental extract injection and every week thereafter. Her initial VAS score was 8.5. The VAS score decreased with repeated

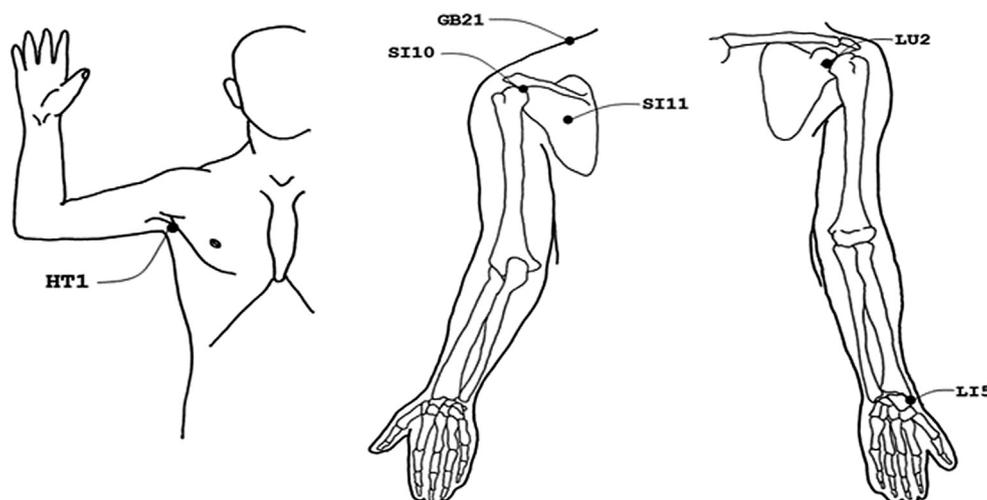


Figure 1 Upper extremity acupuncture points.

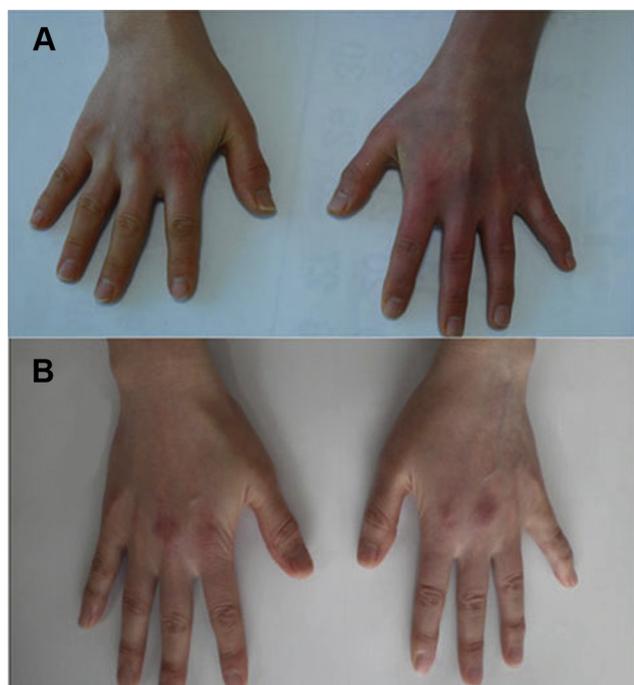


Figure 3 Changes in skin color and swelling caused by injecting placental extract at acupuncture points: The patient's hand and wrist (A) prior to treatment and (B) after treatment.

treatments (Fig. 2). After the sixth treatment with placental extract, the VAS score decreased to 7. In addition, slight diminution in numbness, cold sensation, and swelling of the left wrist joint and the metacarpophalangeal joint of the index finger were noted. By the 22nd treatment, the VAS score had fallen to 3, and the skin color (i.e., redness) had returned to normal (Fig. 3). The cold sensation in the hand and the lower forearm had also decreased, and the swelling of the wrist joint and the metacarpophalangeal joint of the index finger had disappeared. By the 45th treatment, the pain had been completely relieved.

Prior to the injection of the placental extract at the acupuncture points, movement of the left wrist joint was highly restricted with an angle of 10° between flexion and extension. However, the range of motion of the wrist joint for flexion and extension gradually increased as the placental extract was continually injected into the acupuncture points; the range of motion was 50° after the 22nd treatment and 90° after the 45th treatment (Table 1). The pain and the restricted mobility in the shoulder joint were more severe than they were in the wrist joint. The mobility of the shoulder joint was not improved until the

12th treatment. At the 45th treatment of repeated injections of placental extract at the acupuncture points, the movement of the shoulder joint gradually improved to 55° for extension, 170° for flexion, and 110° for abduction (Table 1).

3. Discussion

From a motor perspective, intervention is required to reduce pain in a disabled joint and to recover normal motor function because joint dysfunction can cause muscle hyperalgesia [10]. Because pain and stiffness in the wrist and the shoulder joints are aggravated by movement in CRPS1 patients, we injected placental extract into acupuncture points LI5, LU2, and SI10, which are localized on the radioscaphoid joint, the anterior scapulohumeral joint, and posterior scapulohumeral joint, respectively. In addition, acupuncture points HT1, GB21, and SI11, which coincide with the trigger points of the subscapularis, upper trapezius, and infraspinatus muscles, were injected with placental extract because the trigger points in these muscles and imbalances in these muscles restrict the range of motion [11–13].

Superficial needling targets peripheral sensory afferents, whereas deep needling targets mostly dysfunctional motor units [14]. Therefore, we injected placental extract (1 mL or 2 mL) deeply into the acupuncture points of our CRPS1 patient. The outcome of this study conceivably resulted from the distension achieved by the intra-articular injection of placental extract into acupuncture points LI5, LU2, and SI10, which may have facilitated movement at the disabled joints. The distension could serve as a local volume reservoir from which a supposed anti-inflammatory compound in the placental extract could be subsequently absorbed into the local blood vessels. The injection of placental extract at acupuncture points HT1, GB21, and SI11 may stimulate a hyperalgesic locus to relieve pain and stabilize the rotator cuff in the shoulder joint. Injection into acupuncture points HT1, GB21, and SI11 seems to decrease the overall sensitivity in patients, thus resulting in pain relief and recovery of normal motor function.

This case study is presented to share our experience with injecting placental extract at acupuncture points to treat CRPS1. However, the mechanism through which injecting placental extract at acupuncture points successfully modulates the events that involve inflammation in CRPS1 is beyond the limits of this case report. At the present time, we cannot rule out the possibility that combined treatment with acupuncture and placental extract may evoke synergistic effects.

Table 1 The effect of placental extract injections into acupuncture points on joint movement.

Movement of the joint	Prior to injection	13 th injection	22 nd injection	27 th injection	35 th injection	45 th injection
Extension of the wrist	10°	40°	50°	70°	75°	90°
Flexion of the wrist	10°	45°	50°	60°	70°	90°
Extension of the shoulder	0°	10°	20°	30°	40°	55°
Flexion of the shoulder	0°	30°	45°	55°	60°	80°
Abduction of the shoulder	0°	20°	50°	80°	90°	110°

Conflicts of interest

All authors declare no conflicts of interest.

References

- [1] Huygen FJPM, De Bruijin AGJ, Klein J, Zijlstra FJ. Neuro-immune alterations of the complex regional pain syndrome type 1. *Eur J Pharmacol.* 2001;429:101–113.
- [2] Huygen FJPM, De Bruijin AGJ, De Bruin MT, Groeneweg JG, Klein J, Zijlstra FJ. Evidence for local inflammation in complex regional pain syndrome type 1. *Mediators Inflamm.* 2002;11:47–51.
- [3] Hill SD, Lin MS, Chandler PJ. Reflex sympathetic dystrophy and electroacupuncture. *J Texas Med.* 1991;87:76–81.
- [4] Korpan MI, Dezu Y, Scvhneider B, Leitha T, Fialka-Moser V. Acupuncture in the treatment in the posttraumatic pain syndrome. *Acta Orthopaed Belg.* 1999;65:197–201.
- [5] Leo KC. Use of electrical stimulation at acupuncture points for the treatment of reflex sympathetic dystrophy in a child. *Phys Ther.* 1983;6:957–959.
- [6] Chan CS, Chow SP. Electroacupuncture in the treatment of posttraumatic sympathetic dystrophy (Sudeck's atrophy). *Br J Anaesth.* 1981;53:899–901.
- [7] Kang SY, Kim CY, Roh DH, Yoon SY, Park JH, Lee HJ, et al. Chemical stimulation of the ST36 acupoint reduces both formalin-induced nociceptive behaviors and spinal astrocyte activation via spinal alpha-2 adrenoceptors. *Brain Res Bull.* 2011;86:412–421.
- [8] Yeom MJ, Lee HC, Kim GH, Shim I, Lee HJ, Hahm DH. Therapeutic effect of hominis placenta injection into an acupuncture point on the inflammatory responses in subchondral bone region of adjuvant-induced polyarthritic rat. *Biol Pharm Bull.* 2003;26:1472–1477.
- [9] Kim JK, Kim TH, Park SW, Kim HY, Kim SH, Lee SY, et al. Protective effect of human placenta extract on cartilage degradation in experimental osteoarthritis. *Biol Pharm Bull.* 2010;33:1004–1010.
- [10] Bajaj P, Graven-Nielsen T, Arendt-Nielsen L. Osteoarthritis and its association with muscle hyperalgesia: an experimental controlled study. *Pain.* 2001;93:107–114.
- [11] Lin JJ, Wu YT, Wang SF, Chen SY. Trapezius muscle imbalance in individuals suffering from frozen shoulder syndrome. *Clin Rheumatol.* 2005;24:569–575.
- [12] Halder AM, Zhao KD, Odriscoll SW, Morrey BF, An KN. Dynamic contributions to superior shoulder stability. *J Orthop Res.* 2001;19:206–212.
- [13] Jankovic D, van Zundert A. The frozen shoulder syndrome. Description of a new technique and five case reports using the subscapular nerve block and subscapularis trigger point infiltration. *Acta Anaesthesiol Belg.* 2006;57:137–143.
- [14] Baldry P. Superficial versus deep dry needling. *Acupunct Med.* 2002;20:78–81.